

44. An atomic force microscope, comprising:

a scanning mechanism;

a light source and focusing means positionally decoupled from the said scanning mechanism and arranged to emit a light beam that converges to a focus point and then diverges;

a cantilever moved by said scanning mechanism so that the cantilever may be scanned over a sample;

[a stylus mounted on said cantilever;]

an optical assembly comprising at least one steering lens mounted on said scanning mechanism to guide said light beam on said cantilever and to follow substantially a fixed point on said cantilever during movement of said scanning mechanism; and

a position detector which receives a reflected light beam from said cantilever and detects a deflection of said cantilever.

45. An atomic force microscope as recited in Claim 44, wherein said focus point of said light beam is located between a fixed end and a free end of said scanning mechanism.

46. An atomic force microscope, comprising:

a scanning mechanism;

a cantilever moved by said scanning mechanism so that the cantilever may be scanned over a sample;

[a stylus mounted on said cantilever;]

a light source and focusing means consisting of one or more lenses that emits a beam of light onto said cantilever;

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Cantilever



a position detector which receives said reflected light beam from said cantilever and detects a deflection of said cantilever; and

at least one additional lens, positionally decoupled from the scanning mechanism, and placed in the path of said reflected light beam between said cantilever and said position detector.

47. The atomic force microscope of Claim 46, wherein said at least one lens is arranged at a position between said cantilever and said position detector to create at the position detector a point of convergence of beams reflected off the cantilever when the cantilever is undeflected by the sample, thereby to minimize false deflection signals resulting from the scanning motion of the cantilever relative to said position detector.

48. An atomic force microscope, comprising:
a scanning mechanism comprising at least one scanning tube;

a light source;

a cantilever moved by said scanning mechanism so that the cantilever may be scanned over a sample;

[a stylus mounted on said cantilever;]

an optical assembly comprising at least one steering lens mounted in the interior of said at least one scanning tube to guide a light beam emitted from said light source on said cantilever and to follow substantially a fixed point on said cantilever during movement of said scanning mechanism;
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a position detector which receives a reflected light beam from said cantilever and detects a deflection of said cantilever. (N)

REMARKS

Favorable reconsideration of this application as presently amended and in light of the following discussion is respectfully requested.

Newly submitted Claims 42-48 are presently active in this case, the remaining pending original claims having been cancelled by way of the present Amendment.

In the outstanding Official Action, the drawings were objected to as including informalities requiring correction. In response, submitted herewith is a separate letter requesting approval for substitute drawings, which substitute drawings correspond to the substitute drawings submitted in the parent application. Accordingly, the objection to the drawings is believed to have been overcome.

Additionally, the title was objected to as not being sufficiently descriptive. In response, the amended title of the parent application has been adopted herewith.

Further, the disclosure was objected to as including various informalities requiring correction. In response, the informalities identified have been corrected herewith.

Further, the pending claims were rejected on various prior art grounds which are now moot in view of the cancellation of the original claims and the substitution of new Claims 42-48 presented herewith.